CLAIMS

[1] A light branching optical waveguide, comprising:

at least one incident light waveguide (A) optically connected to one end of a multi-mode optical waveguide; and

output light waveguides (B) larger in number than the incident light waveguide (A) optically connected to the other end thereof,

the light branching optical waveguide being characterized in that:

an intensity distribution of light entering from at least one optical waveguide (a) out of the incident light waveguide (A) into the multi-mode optical waveguide at a connecting surface of the incident light waveguide (A) and the multi-mode optical waveguide is asymmetric with respect to a geometrical central axis of the optical waveguide (a); and

an extended line of the geometrical central axis of the optical waveguide (a) does not coincide with a geometrical central axis of the multi-mode optical waveguide.

[2] A light branching optical waveguide, comprising:

at least one incident light waveguide (A) optically connected to one end of a multi-mode optical waveguide; and

output light waveguides (B) larger in number than the incident light waveguide (A) optically connected to the other end thereof,

the light branching optical waveguide being characterized in

that:

an intensity distribution of light entering from at least one optical waveguide (a) out of the incident light waveguide (A) into the multi-mode optical waveguide at a connecting surface of the incident light waveguide (A) and the multi-mode optical waveguide is asymmetric with respect to a geometrical central axis of the optical waveguide (a); and

a core shape of the multi-mode optical waveguide is asymmetric with respect to a geometrical central axis of the multi-mode optical waveguide.

[3] A light branching optical waveguide according to claim 2, wherein an extended line of the geometrical central axis of the optical waveguide (a) does not coincide with the geometrical central axis of the multi-mode optical waveguide.

[4] A light branching optical waveguide according to claim 1 or claim 3, characterized in that an optical central axis having a peak intensity in the intensity distribution of light entering into the multi-mode optical waveguide from the optical waveguide (a) substantially coincides with the geometrical central axis of the multi-mode optical waveguide.

[5] A light branching optical waveguide according to any one

of claims 2 to 4, wherein the core shape of the multi-mode optical waveguide has a notch at least one of its side edges.

[6] A light branching optical waveguide according to claim 5, wherein:

the notch is obtained by cutting out a core of the multi-mode optical waveguide from a side to be connected to the incident light waveguide (A) to a side edge of the core; and

a shape of the notch has a sinusoidal curve ranging from the side to be connected to the incident light waveguide (A) to a side to be connected to the output light waveguides (B).

[7] A light branching optical waveguide according to claim 1 or claim 2, wherein:

the incident light waveguide (A) comprises one incident light waveguide;

the output light waveguides (B) comprise two or more output light waveguides; and

a branching ratio between quantities of light branched into the two or more respective output light waveguides is substantially equal.

[8] A light branching optical waveguide according to any one of claims 1 to 7, wherein at least one of the incident light waveguide

(A) or the output light waveguides (B) comprises a single-mode optical waveguide.

[9] A light branching optical waveguide according to any one of claims 1 to 8, wherein at least one of the core or a clad constituting the multi-mode optical waveguide is composed of a polymer partially or entirely.

[10] A light branching optical waveguide according to claim 9, wherein the polymer comprises a polyimide-based resin containing fluorine.

[11] An optical device comprising the light branching optical waveguide according to any one of claims 1 to 10.